<110> OLSON, ERIC
FREY, NORBERT

<120> METHODS AND COMPOSITIONS RELATING TO MUSCLE SPECIFIC SARCOMERIC CALCINEURIN-BINDING PROTEINS (CALSARCINS)

<130> UTSD:729US

<140> 10/045,594
<141> 2001-11-07

<150> 60/246,629
<151> 2000-11-07

<160> 12

<170> PatentIn Ver. 2.1

<210> 1
<211> 2531
<212> DNA
<213> Homo sapiens

<400> 1
gtcccaggtt caaggataaa aaccatcagg cccaagtgcc atccatagtc catctccaga 60
gtcttcctcc acaaactggg attcatcccc gctgaaaaag cacaatctaa cagcaaggga 120
acaaaaaaac catgctatca cataatacta tgatgaagca gagaaaacag caagcaacag 180
ccatcatgaa ggaagtccat ggaaatgatg ttgatggcat ggacctgggc aaaaaggtca 240
gcatccccag agacatcatg ttggaagaat tatcccatct cagtaaccgt ggtgccaggc 300
tatttaagat gcgtcaaaga agatctgaca aatacacatt tgaaaatttc cagtatcaat 360
ctagagcaca aataaatcac agtattgcta tgcagaatgg gaaagtggat ggaagtaact 420
tggaaggtgg ttcgcagcaa gccccttga ctcctcccaa caccccagat ccacgaagcc 480
ctccaaatcc agacaacatt gctccaggat attctggacc actgaaggaa attcctcctg 540
aaaaattcaa caccacagct gtccctaagt actatcaatc tccctgggag caagccatta 600
gcaatgatcc ggagctttta gaggctttat atcctaaact tttcaagcct gaaggaaagg 660
cagaactgcc tgattacagg agctttaaca gggttgccac accatttgga ggttttgaaa 720
aagcatcaag aatggttaaa tttaaagttc cagattttga gctactattg ctaacagatc 780
ccaggtttat gtcctttgtc aatccccttt ctggcagacg gtcctttaat aggactccta 840
agggatggat atctgagaat attcctatag tgataacaac cgaacctaca gatgatacca 900
ctgtaccaga atcagaagac ctatgaaaag aaagttgtat gtgccacata aaactctgaa 960
tataaaagtt gctgttctac tattttaact actggcaaag cacttgcatt tttcattagt 1020
agcaacaata gcaatttagt gattttcctt ttctgacatt caatttcaat ctcagatcaa 1080
atactaataa acaattagaa atcttacttt aaaaaactta taactcactt gtcttcattc 1140
ataatttgt tttcacctgg tttaaagaat ccagatattt tactgcaaaa gttcagatgg 1200
aaaagtaatt gacagcttca cctttgtctc attttatatg atttattaca gtgtaagttt 1260
ttcaagtgga atctagaatc aaaatacagg gagagatatg aagacctatt cagagtttca 1320
tctggggatg aaagctatgg aagatgatgt acaaatgtta ttgatggaga aaatggttgg 1380
tgtgtccttt ctggtgacca tgagaaaata atatgtcttg atgaagtctt ttcattagtc 1440
actcttagaa ttctaaagtg ctttgcactt ttcaatatgt tttgaatcat taggtaattt 1500
attctggatg atattctcca aaattcaatt cagttattat attcatttag cattaagtca 1560
aggagactga gaatgactca agggacgtca tagtaccata gttttaagga ccaaggtgtg 1620
cccagaattc aagtttcaca aatcccaatg ctgtgcattg attatgttca actttatgtg 1680
tgcattctta gaagagtaag aacaaataaa gtacaccgta atatacatat aaatacattc 1740
atgtttgtga gagaaggaaa gagtaagtaa tttgaattgg cagctttctt tgctaaatct 1800
ttaaattctg ttaagatcct caagtaactg gggagtacat gctttaggac acaaacaaaa 1860

acaaagggca tgaaagtatc tgaaagcaat gtagcacata tctatcgtaa tatatgtaat 1920
atattgacat aaaagacaca aactaatata aagttatagt tatatcttaa aatataattg 1980
aagaagcata tgacatataa cttatagaaa tcagtatcaa ttcctcccat ttcaattcag 2040
ttaagactct gtgatagatg tttatagcag agaagaaatg tctcatcaat aggaaaacta 2100
tcagataaag tttaggagat aggaagaagg actgtgtgta gtaatgaaaa taccaagttg 2160
caacattaca tgtttacaaa aaaaatctgt gtttgtagtg tggaagttgg tgactgtttt 2220
aatcatcatc tagacttgtt aagtagaaaa attttaaaaa tttgcttatg aaaatataac 2280
ccccagaaag taacaatgac aaagtattat atttatatat attattgtag agaatttgta 2340
tatttttaaa gatgtcttaa gatatcttaa ttttatttat aagttttggt gtttacctgt 2400
tttaaaatga taatgttggc atctgtgata aactatcaat gaggctccca tcatgccatt 2460
ttttgttcat tttaatcttt aaaaaataaa aattaggcat attaaaaaaa aaaaaaaaaa 2520
aaaaaaaaaa a 2531

<210> 2
<211> 264
<212> PRT
<213> Homo sapiens

<400> 2
Met Leu Ser His Asn Thr Met Met Lys Gln Arg Lys Gln Gln Ala Thr
1 5 10 15

Ala Ile Met Lys Glu Val His Gly Asn Asp Val Asp Gly Met Asp Leu
20 25 30

Gly Lys Lys Val Ser Ile Pro Arg Asp Ile Met Leu Glu Glu Leu Ser
35 40 45

His Leu Ser Asn Arg Gly Ala Arg Leu Phe Lys Met Arg Gln Arg Arg
50 55 60

Ser Asp Lys Tyr Thr Phe Glu Asn Phe Gln Tyr Gln Ser Arg Ala Gln
65 70 75 80

Ile Asn His Ser Ile Ala Met Gln Asn Gly Lys Val Asp Gly Ser Asn
85 90 95

Leu Glu Gly Gly Ser Gln Gln Ala Pro Leu Thr Pro Pro Asn Thr Pro
100 105 110

Asp Pro Arg Ser Pro Pro Asn Pro Asp Asn Ile Ala Pro Gly Tyr Ser
115 120 125

Gly Pro Leu Lys Glu Ile Pro Pro Glu Lys Phe Asn Thr Thr Ala Val
130 135 140

Pro Lys Tyr Tyr Gln Ser Pro Trp Glu Gln Ala Ile Ser Asn Asp Pro
145 150 155 160

Glu Leu Leu Glu Ala Leu Tyr Pro Lys Leu Phe Lys Pro Glu Gly Lys
165 170 175

Ala Glu Leu Pro Asp Tyr Arg Ser Phe Asn Arg Val Ala Thr Pro Phe
180 185 190

Gly Gly Phe Glu Lys Ala Ser Arg Met Val Lys Phe Lys Val Pro Asp

```
        195                 200                 205

Phe Glu Leu Leu Leu Leu Thr Asp Pro Arg Phe Met Ser Phe Val Asn
    210                 215                 220

Pro Leu Ser Gly Arg Arg Ser Phe Asn Arg Thr Pro Lys Gly Trp Ile
225                 230                 235                 240

Ser Glu Asn Ile Pro Ile Val Ile Thr Thr Glu Pro Thr Asp Asp Thr
                245                 250                 255

Thr Val Pro Glu Ser Glu Asp Leu
            260
```

<210> 3
<211> 1207
<212> DNA
<213> Mus musculus

<400> 3

```
gagagccgac caccaactga gcagctggtc agatccacct ccaccatgcc actctcagga 60
accccggccc ctaacaagag gaggaagtca agcaaactga ttatggagct cactggaggt 120
ggccgggaga gctcaggcct gaacctgggc aagaagatca gtgtcccaag ggatgtgatg 180
ttggaggagc tgtcccttct taccaaccga ggctccaaga tgttcaagct acggcagatg 240
cgggtggaga aatttatcta tgagaatcac cccgatgttt tctctgacag ctcaatggat 300
cacttccaga agtttcttcc cacagtggga ggacagctgg agacagctgg tcagggcttc 360
tcatatggca agggcagcag tggaggccag gctggcagca gtggctctgc tggacagtat 420
ggctctgacc gtcatcagca gggctctggg tttggagctg ggggttcagg tggtcctggg 480
ggccaggctg gtggaggagg agctcctggc acagtagggc ttggagagcc cggatcaggt 540
gaccaggcag gtggagatgg aaaacatgtc actgtgttca agacttatat ttccccatgg 600
gatcgggcca tgggggttga tcctcagcaa aaagtggaac ttggcattga cctactggca 660
tacggtgcca aagctgaact ccccaaatat aagtccttca acaggacagc aatgccctac 720
ggtggatatg agaaggcctc caaacgcatg accttccaga tgcccaagtt tgacctgggg 780
cctctgctga gtgaacccct ggtcctctac aaccagaacc tctccaacag gccttctttc 840
aatcgaaccc ctattccctg gttgagctct ggggagcatg tagactacaa cgtggatgtt 900
ggtatcccct tggatggaga gacagaggag ctgtgaagtg cctcctcctg tcatgtgcat 960
catttccctt ctctggttcc aatttgagag tggatgctgg acaggatgcc ccaactgtta 1020
atccagtatt cttgtggcaa tggagggtaa agggtggggt ccgttgcctt tccacccttc 1080
aagttcctgc tccgaagcat ccctcctcac cagctcagag ctcccatcct gctgtaccat 1140
atggaatctg ctcttttatg gaattttctc tgccaccggt aacagtcaat aaacttcaag 1200
gaaatga                                                          1207
```

<210> 4
<211> 296
<212> PRT
<213> Mus musculus

<400> 4

```
Met Pro Leu Ser Gly Thr Pro Ala Pro Asn Lys Arg Arg Lys Ser Ser
  1               5                  10                  15

Lys Leu Ile Met Glu Leu Thr Gly Gly Gly Arg Glu Ser Ser Gly Leu
             20                  25                  30

Asn Leu Gly Lys Lys Ile Ser Val Pro Arg Asp Val Met Leu Glu Glu
```

```
         35                  40                  45

Leu Ser Leu Leu Thr Asn Arg Gly Ser Lys Met Phe Lys Leu Arg Gln
     50                  55                  60

Met Arg Val Glu Lys Phe Ile Tyr Glu Asn His Pro Asp Val Phe Ser
 65                  70                  75                  80

Asp Ser Ser Met Asp His Phe Gln Lys Phe Leu Pro Thr Val Gly Gly
                 85                  90                  95

Gln Leu Glu Thr Ala Gly Gln Gly Phe Ser Tyr Gly Lys Gly Ser Ser
            100                 105                 110

Gly Gly Gln Ala Gly Ser Ser Gly Ser Ala Gly Gln Tyr Gly Ser Asp
        115                 120                 125

Arg His Gln Gln Gly Ser Gly Phe Gly Ala Gly Gly Ser Gly Gly Pro
    130                 135                 140

Gly Gly Gln Ala Gly Gly Gly Gly Ala Pro Gly Thr Val Gly Leu Gly
145                 150                 155                 160

Glu Pro Gly Ser Gly Asp Gln Ala Gly Gly Asp Gly Lys His Val Thr
                165                 170                 175

Val Phe Lys Thr Tyr Ile Ser Pro Trp Asp Arg Ala Met Gly Val Asp
            180                 185                 190

Pro Gln Gln Lys Val Glu Leu Gly Ile Asp Leu Leu Ala Tyr Gly Ala
        195                 200                 205

Lys Ala Glu Leu Pro Lys Tyr Lys Ser Phe Asn Arg Thr Ala Met Pro
    210                 215                 220

Tyr Gly Gly Tyr Glu Lys Ala Ser Lys Arg Met Thr Phe Gln Met Pro
225                 230                 235                 240

Lys Phe Asp Leu Gly Pro Leu Leu Ser Glu Pro Leu Val Leu Tyr Asn
                245                 250                 255

Gln Asn Leu Ser Asn Arg Pro Ser Phe Asn Arg Thr Pro Ile Pro Trp
            260                 265                 270

Leu Ser Ser Gly Glu His Val Asp Tyr Asn Val Asp Val Gly Ile Pro
        275                 280                 285

Leu Asp Gly Glu Thr Glu Glu Leu
    290                 295


<210> 5
<211> 1261
<212> DNA
<213> Homo sapiens

<220>
```

<221> modified_base
<222> (1221)
<223> n = a, c, g or t/u

<400> 5
cggtcacagc agctcagtcc tccaaagctg ctggacccca gggagagctg accactgccc 60
gagcagccgg ctgaatccac ctccacaatg ccgctctcag gaaccccggc ccctaataag 120
aagaggaaat ccagcaagct gatcatggaa ctcactggag gtggacagga gagctcaggc 180
ttgaacctgg gcaaaaagat cagtgtccca agggatgtga tgttggagga actgtcgctg 240
cttaccaacc ggggctccaa gatgttcaaa ctgcggcaga tgagggtgga gaagtttatt 300
tatgagaacc accctgatgt tttctctgac agctcaatgg atcacttcca gaagttcctt 360
ccaacagtgg ggggacagct gggcacagct ggtcagggat tctcatacag caagagcaac 420
ggcagaggcg gcagccaggc agggggcagt ggctctgccg gacagtatgg ctctgatcag 480
cagcaccatc tgggctctgg gtctggagct gggggtacag gtggtcccgc gggccaggct 540
ggcaaaggag gagctgctgg cacaacaggg gttggtgaga caggatcagg agaccaggca 600
ggcggagaag gaaaacatat cactgtgttc aagacctata tttccccatg ggagcgagcc 660
atgggggttg acccccagca aaaaatggaa cttggcattg acctgctggc ctatggggcc 720
aaagctgaac ttcccaaata taagtccttc aacaggacgg caatgcccta tggtggatat 780
gagaaggcct ccaaacgcat gaccttccag atgcccaagt ttgacctggg gcccttgctg 840
agtgaacccc tggtcctcta caaccaaaac ctctccaaca ggccttcttt caatcgaacc 900
cctattccct ggctgagctc tggggagcct gtagactaca acgtggatat tggcatcccc 960
ttggatggag aaacagagga gctgtgaggt gtttcctcct ctgatttgca tcatttcccc 1020
tctctggctc caatttggag agggaatgct gagcagatag cccccattgt taatccagta 1080
tccttatggg aatggaggga aaaaggagag atctaccttt ccatccttta ctccaagtcc 1140
ccactccacg catccttcct caccaactca gagctcccct tctacttgct ccatatggaa 1200
cctgctcgtt tatggaattt ntctgccacc agtaacagtc aataaacttc aaggaaaatg 1260
a 1261

<210> 6
<211> 299
<212> PRT
<213> Homo sapiens

<400> 6
Met Pro Leu Ser Gly Thr Pro Ala Pro Asn Lys Lys Arg Lys Ser Ser
1 5 10 15

Lys Leu Ile Met Glu Leu Thr Gly Gly Gly Gln Glu Ser Ser Gly Leu
20 25 30

Asn Leu Gly Lys Lys Ile Ser Val Pro Arg Asp Val Met Leu Glu Glu
35 40 45

Leu Ser Leu Leu Thr Asn Arg Gly Ser Lys Met Phe Lys Leu Arg Gln
50 55 60

Met Arg Val Glu Lys Phe Ile Tyr Glu Asn His Pro Asp Val Phe Ser
65 70 75 80

Asp Ser Ser Met Asp His Phe Gln Lys Phe Leu Pro Thr Val Gly Gly
85 90 95

Gln Leu Gly Thr Ala Gly Gln Gly Phe Ser Tyr Ser Lys Ser Asn Gly
100 105 110

Arg Gly Gly Ser Gln Ala Gly Gly Ser Gly Ser Ala Gly Gln Tyr Gly

```
        115                 120                 125

Ser Asp Gln Gln His His Leu Gly Ser Gly Ser Gly Ala Gly Gly Thr
    130                 135                 140

Gly Gly Pro Ala Gly Gln Ala Gly Lys Gly Gly Ala Ala Gly Thr Thr
145                 150                 155                 160

Gly Val Gly Glu Thr Gly Ser Gly Asp Gln Ala Gly Gly Glu Gly Lys
                165                 170                 175

His Ile Thr Val Phe Lys Thr Tyr Ile Ser Pro Trp Glu Arg Ala Met
            180                 185                 190

Gly Val Asp Pro Gln Gln Lys Met Glu Leu Gly Ile Asp Leu Leu Ala
        195                 200                 205

Tyr Gly Ala Lys Ala Glu Leu Pro Lys Tyr Lys Ser Phe Asn Arg Thr
    210                 215                 220

Ala Met Pro Tyr Gly Gly Tyr Glu Lys Ala Ser Lys Arg Met Thr Phe
225                 230                 235                 240

Gln Met Pro Lys Phe Asp Leu Gly Pro Leu Leu Ser Glu Pro Leu Val
                245                 250                 255

Leu Tyr Asn Gln Asn Leu Ser Asn Arg Pro Ser Phe Asn Arg Thr Pro
            260                 265                 270

Ile Pro Trp Leu Ser Ser Gly Glu Pro Val Asp Tyr Asn Val Asp Ile
        275                 280                 285

Gly Ile Pro Leu Asp Gly Glu Thr Glu Glu Leu
    290                 295
```

<210> 7
<211> 982
<212> DNA
<213> Mus musculus

<400> 7
attcggcaca tgggatcgag ggaccatgcc gttccaggtt caaggataaa acccattggg 60
ccatagtgcc gtcatattcc accttcagtg ccttcctcca caattgggat tcacccctgc 120
tgaaaagcgc acgctgacag caagggaaca aaaaactatg ctatcacata gtgccatggt 180
gaagcaaagg aaacagcaag catcagccat cacgaaggaa atccatggac atgatgttga 240
cggcatggac ctgggcaaaa aagttagcat ccccagagac atcatgatag aagaattgtc 300
ccatttcagt aatcgtgggg ccaggctgtt taagatgcgt caaagaagat ctgacaaata 360
caccttttgaa aatttccagt atgaatctag agcacaaatt aatcacaata tcgccatgca 420
gaatgggaga gttgatggaa gcaacctgga aggtggctca cagcaaggcc cctcaactcc 480
gcccaacacc cccgatccac gaagcccccc aaatccagag aacatcgcac caggatattc 540
tggaccactg aaggaaattc ctcctgaaag gtttaacacg acggccgttc ctaagtacta 600
ccggtctcca tgggagcagg cgattggcag cgatccggag ctcctggagg ctttgtaccc 660
aaaacttttc aagcctgaag gaaaagcaga actgcgggat tacaggagct ttaacagggt 720
tgccactcca tttggaggtt ttgaaaaagc atcaaaaatg gtcaaattca aagttccaga 780
ttttgaacta ctgctgctga cagatcccag gttcttggcc tttgccaatc ctctttcggg 840
cagacgatgc tttaacaggg cgccaaaggg gtgggtatct gagaatatcc ccgtcgtgat 900

cacaactgag cctacagaag acgccactgt accggaatca gatgacctgt gagagggaag 960
ctggggatgc cacaggaagt tc 982

<210> 8
<211> 264
<212> PRT
<213> Mus musculus

<400> 8

```
Met Leu Ser His Ser Ala Met Val Lys Gln Arg Lys Gln Gln Ala Ser
  1               5                  10                  15

Ala Ile Thr Lys Glu Ile His Gly His Asp Val Asp Gly Met Asp Leu
             20                  25                  30

Gly Lys Lys Val Ser Ile Pro Arg Asp Ile Met Ile Glu Glu Leu Ser
         35                  40                  45

His Phe Ser Asn Arg Gly Ala Arg Leu Phe Lys Met Arg Gln Arg Arg
     50                  55                  60

Ser Asp Lys Tyr Thr Phe Glu Asn Phe Gln Tyr Glu Ser Arg Ala Gln
 65                  70                  75                  80

Ile Asn His Asn Ile Ala Met Gln Asn Gly Arg Val Asp Gly Ser Asn
                 85                  90                  95

Leu Glu Gly Gly Ser Gln Gln Gly Pro Ser Thr Pro Pro Asn Thr Pro
            100                 105                 110

Asp Pro Arg Ser Pro Pro Asn Pro Glu Asn Ile Ala Pro Gly Tyr Ser
        115                 120                 125

Gly Pro Leu Lys Glu Ile Pro Pro Glu Arg Phe Asn Thr Thr Ala Val
    130                 135                 140

Pro Lys Tyr Tyr Arg Ser Pro Trp Glu Gln Ala Ile Gly Ser Asp Pro
145                 150                 155                 160

Glu Leu Leu Glu Ala Leu Tyr Pro Lys Leu Phe Lys Pro Glu Gly Lys
                165                 170                 175

Ala Glu Leu Arg Asp Tyr Arg Ser Phe Asn Arg Val Ala Thr Pro Phe
            180                 185                 190

Gly Gly Phe Glu Lys Ala Ser Lys Met Val Lys Phe Lys Val Pro Asp
        195                 200                 205

Phe Glu Leu Leu Leu Leu Thr Asp Pro Arg Phe Leu Ala Phe Ala Asn
    210                 215                 220

Pro Leu Ser Gly Arg Arg Cys Phe Asn Arg Ala Pro Lys Gly Trp Val
225                 230                 235                 240

Ser Glu Asn Ile Pro Val Val Ile Thr Thr Glu Pro Thr Glu Asp Ala
                245                 250                 255
```

Thr Val Pro Glu Ser Asp Asp Leu
260

<210> 9
<211> 3330
<212> DNA
<213> Homo sapiens

<400> 9
gggacgccac gcaactctca gcttcccgac agaggtgtta atcttgaggg tctaagattc 60
cctcctgcct attgaggtcc catcctctca ggatgatccc caaggagcag aaggggccag 120
tgatggctgc catgggggac ctcactgaac cagtccctac gctggacctg ggcaagaagc 180
tgagcgtgcc ccaggacctg atgatggagg agctgtcact acgcaacaac agagggtccc 240
tcctcttcca gaagaggcag cgccgtgtgc agaagttcac tttcgagtta gcagccagcc 300
agcgggcgat gctggccgga agcgccagga ggaaggtgac tggaacagcg gagtcgggga 360
cggttgccaa tgccaatggc cctgaggggc cgaactaccg ctcggagctc cacatcttcc 420
cggcctcacc cggggcctca ctcgggggtc ccgagggcgc ccaccctgca gccgcccctg 480
ctgggtgcgt ccccagcccc agcgccctgg cgccaggcta tgcggagccg ctgaagggcg 540
tcccgccaga gaagttcaac cacaccgcca tccccaaggg ctaccgctgc ccttggcagg 600
agttcgtcag ctaccgggac taccagagcg atggccgaag tcacaccccc agccccaacg 660
actaccgaaa tttcaacaag accccggtgc catttggagg acccctcgtg gggggcactt 720
ttcccaggcc aggcaccccc ttcatcccgg agcccctcag tggcttggaa ctcctccgtc 780
tcagacccag cttcaacaga gtggcccagg gctgggtccg taacctccca gagtccgagg 840
agctgtagcc ctagcctgaa tcttcagttc cccagtctcg ggggcctggt aacatccgga 900
gccaagactt gtggacagca cttcacagtt gaagaagggc cttcacacac aaaacctgat 960
tgcaaatggc ttcagaggtc accaagttca gtcgtcccaa aacatgggtg tgtttcaaaa 1020
ttacctgggg atgttgttcc aaatccagac aactggactg tcccagactt gcagcatcag 1080
agtctcctga gtcgaggaat ctgtattatt aatagcaacc agggccgggt gtcgtggctc 1140
acgcctgtca tcccagcact ttgggaggcc gaggcaggag gatcacctga ggtcaggagt 1200
tttgagacca gtctggccaa aatagtggaa ccccgtcgct actaaaaata caaaaatgag 1260
tcggacatgg tggtgcatgc ctgtaatccc agctacttgg gaggctgaga caggagaatc 1320
acttgaacta ggaggcagag gttgcagtga gccgagattg cgccactgca ccccagcctg 1380
gacaacagag tgagactcct tctcaaaagt aaataaataa atagcaacca gtactccagg 1440
tgattccagc ataacttatc catggtttgt gtcattagga gtccacatcc acacctctgc 1500
tctttcctgt tcctgtagtg tacactcccc cggtgacagg gtgctcactg gcaccccatc 1560
ttcctgtgaa taactcaaat aattagaaaa tgttcctttt actgagatgc agttggtctt 1620
catctattca tgctctaaac agttcctaag cgctgactgt gcgctagaca ctgccaggcc 1680
cgggcctcga ggaggaaaag acagtaggga agacattata gagcatgaag tcaccataat 1740
tttccctaaa gcatgcttat tgacaattga ggaacaaagt gttgggagca gaagaaggag 1800
tccctcaccc taggtgtgag atgggattct ggaagcttcc tgaaggattt gagtgggacc 1860
ttgtgggagg cgtgagagtc catgaagggg gtgtgagggg gagggtattt ctggaaagtg 1920
gaccagcatg tgcaaaaata tggaactgag cacgggtgca gggtgttctg cagaagggag 1980
aaggctgtgc tagaggagcc agtgagggcc agcatggggt gggcttcact aaggaaatgg 2040
ggaaggtttt agtgatgggt cttgctgggt gctgtgtggg gcgcatattg gagaagggta 2100
atgccagaag ccaggaagcc tgcaagggat gaggccatgg gaatggagag aaggggccac 2160
ccactgggca cctaacagga caggtgcaaa gtggggtgct tattaagatt ccttctttcc 2220
actccatttt gagcaggctg cttaaagtgg tggtgatgat gatgatgatg atggcagctt 2280
tatatcgagt gcctcagtgc ttgggctggt agtagtttct ctacatatct tatttctaat 2340
tctcagaaca accctgagag aaagatattg ttgtccccac tttacagatg tggatattta 2400
ggccaaaagg aggaagtgac tttccagggg cagacaccaa atgggaatct gattccagtg 2460
gatgtctctt ttcagtgcac tgggtggtca atgcccactc gctctgaaat catctgactg 2520
tgatgccctg ccttggagtt tagaagttga gtgcaggctt gggagtcaga ctggatgggg 2580
taggttctaa ctctgccact gctagccgga tgaacttgag caagtcattt cacatctccg 2640
agcctctgtt tctccaagtg taagatgagg acaagtataa aacctccttt atgggtttgt 2700
tgtgaacaca gtgcagggca catttataat aagagctcag tcaatggtag gtttcatgca 2760

```
actgctgctc taggctggaa aagttgttct tgcactggat gcagcatgag aagctggctg 2820
ctaagatgtc actgggggtc actaaagctg aagcctgaag gaaagcctct cattgctgta 2880
gagctctccc tgcctctctc tctgggggcg atggggaagg tcaggagtcc agcccattcc 2940
cagggtgtgt gggatagcga ttgcattttc cttttgctct ggagtttcac tccccttctg 3000
ggtcccaagg gcccaatggc ctgactttta gaattgcttg caattggtgt tttctcttga 3060
atttgggggc tgccatttaa agccaggttt ccatgagctg aagaccagcc attcaagaat 3120
ctgaaaagta gacaagagga ctccagttgc ctcaggttgg ttctgctgtg ctctggaaag 3180
taactgcagc caccaggtat gaaaaggagc ctggtgggga gaccactgca cccaaaacaa 3240
atcctttctt cttctgagaa tgtgactttt tctggtgttg taaaaaagaa aaaaaaaaag 3300
aatgctcatt gtaaaaaaaa aaaaaaaaaa                                  3330
```

<210> 10
<211> 251
<212> PRT
<213> Homo sapiens

<400> 10

```
Met Ile Pro Lys Glu Gln Lys Gly Pro Val Met Ala Ala Met Gly Asp
  1               5                  10                  15

Leu Thr Glu Pro Val Pro Thr Leu Asp Leu Gly Lys Lys Leu Ser Val
             20                  25                  30

Pro Gln Asp Leu Met Met Glu Glu Leu Ser Leu Arg Asn Asn Arg Gly
         35                  40                  45

Ser Leu Leu Phe Gln Lys Arg Gln Arg Arg Val Gln Lys Phe Thr Phe
     50                  55                  60

Glu Leu Ala Ala Ser Gln Arg Ala Met Leu Ala Gly Ser Ala Arg Arg
 65                  70                  75                  80

Lys Val Thr Gly Thr Ala Glu Ser Gly Thr Val Ala Asn Ala Asn Gly
                 85                  90                  95

Pro Glu Gly Pro Asn Tyr Arg Ser Glu Leu His Ile Phe Pro Ala Ser
            100                 105                 110

Pro Gly Ala Ser Leu Gly Gly Pro Glu Gly Ala His Pro Ala Ala Ala
        115                 120                 125

Pro Ala Gly Cys Val Pro Ser Pro Ser Ala Leu Ala Pro Gly Tyr Ala
    130                 135                 140

Glu Pro Leu Lys Gly Val Pro Pro Glu Lys Phe Asn His Thr Ala Ile
145                 150                 155                 160

Pro Lys Gly Tyr Arg Cys Pro Trp Gln Glu Phe Val Ser Tyr Arg Asp
                165                 170                 175

Tyr Gln Ser Asp Gly Arg Ser His Thr Pro Ser Pro Asn Asp Tyr Arg
            180                 185                 190

Asn Phe Asn Lys Thr Pro Val Pro Phe Gly Gly Pro Leu Val Gly Gly
        195                 200                 205
```

```
Thr Phe Pro Arg Pro Gly Thr Pro Phe Ile Pro Glu Pro Leu Ser Gly
    210                 215                 220

Leu Glu Leu Leu Arg Leu Arg Pro Ser Phe Asn Arg Val Ala Gln Gly
225                 230                 235                 240

Trp Val Arg Asn Leu Pro Glu Ser Glu Glu Leu
                245                 250
```

<210> 11
<211> 913
<212> DNA
<213> Mus musculus

<400> 11

```
gtcggactgc aatagacaca caggccataa aactccagct tcccgactga agtgttaatc 60
ttgggggtct gacatttctt cccatctact gtggccccac caggatgatc cccaaggagc 120
agaaggagcc agtgatggct gtcccggggg accttgctga accagtccct tcgctggacc 180
tggggaagaa gctgagcgtg cctcaggacc taatgataga ggagctgtct ctacgaaaca 240
accgcggatc cctcctcttt cagaagaggc agcgccgggt gcagaagttt acctttgagc 300
tatcagaaag tttgcaggcc atcctggcga gtagtgcccg agggaaagtg gctggcagag 360
cggcgcaggc aacggttccc aatggcttgg aggagcagaa ccaccactcc gagacgcacg 420
tgttccaggg gtcacctggg gaccccggga tcacccatct gggagcagcg gggactgggt 480
cggtccgtag tccaagcgcc ctggcaccag gctatgcaga gcccctgaag ggcgtcccac 540
cggagaagtt caaccacact gccatcccca aaggctaccg gtgcccttgg caggagttca 600
ccagctacca agactactcg agtggcagca gaagtcacac tcccatcccc cgagactatc 660
gcaacttcaa caagaccccc gtgccatttg gaggacccca cgtgagggag gccattttcc 720
acgcaggcac ccccttgtc ccggagtcct tcagtggctt ggaacttctc cgcctcagac 780
ccaatttcaa cagggttgct cagggctggg tccggaagct cccggagtct gaggaactgt 840
agcctcagcc tgaagctaca attccctggg ctcaagaaac atgcttgtct tgaaaaaaaa 900
aaaaaaaaaa aaa                                                    913
```

<210> 12
<211> 245
<212> PRT
<213> Mus musculus

<400> 12

```
Met Ile Pro Lys Glu Gln Lys Glu Pro Val Met Ala Val Pro Gly Asp
  1               5                  10                  15

Leu Ala Glu Pro Val Pro Ser Leu Asp Leu Gly Lys Lys Leu Ser Val
             20                  25                  30

Pro Gln Asp Leu Met Ile Glu Glu Leu Ser Leu Arg Asn Asn Arg Gly
         35                  40                  45

Ser Leu Leu Phe Gln Lys Arg Gln Arg Arg Val Gln Lys Phe Thr Phe
     50                  55                  60

Glu Leu Ser Glu Ser Leu Gln Ala Ile Leu Ala Ser Ser Ala Arg Gly
 65                  70                  75                  80

Lys Val Ala Gly Arg Ala Ala Gln Ala Thr Val Pro Asn Gly Leu Glu
                 85                  90                  95
```

Glu Gln Asn His His Ser Glu Thr His Val Phe Gln Gly Ser Pro Gly
100 105 110

Asp Pro Gly Ile Thr His Leu Gly Ala Ala Gly Thr Gly Ser Val Arg
115 120 125

Ser Pro Ser Ala Leu Ala Pro Gly Tyr Ala Glu Pro Leu Lys Gly Val
130 135 140

Pro Pro Glu Lys Phe Asn His Thr Ala Ile Pro Lys Gly Tyr Arg Cys
145 150 155 160

Pro Trp Gln Glu Phe Thr Ser Tyr Gln Asp Tyr Ser Ser Gly Ser Arg
165 170 175

Ser His Thr Pro Ile Pro Arg Asp Tyr Arg Asn Phe Asn Lys Thr Pro
180 185 190

Val Pro Phe Gly Gly Pro His Val Arg Glu Ala Ile Phe His Ala Gly
195 200 205

Thr Pro Phe Val Pro Glu Ser Phe Ser Gly Leu Glu Leu Leu Arg Leu
210 215 220

Arg Pro Asn Phe Asn Arg Val Ala Gln Gly Trp Val Arg Lys Leu Pro
225 230 235 240

Glu Ser Glu Glu Leu
245